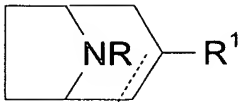
Claims:

1. A chemical compound having the general formula



(I)

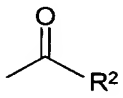
in labelled or unlabelled form, or any of its enantiomers or any mixture thereof, or a pharmaceutically acceptable salt thereof;

wherein

 represents a single or a double bond;

R represents hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, a mono- or polycyclic aryl group, or aralkyl; and

R^1 represents a group of the formula



wherein R^2 represents hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkyl-alkyl, amino or a fluorescent group; or

R^1 represents an mono- or polycyclic aryl group, which aryl group is substituted one or more times with substituents selected from the group consisting of alkyl, cycloalkyl, cycloalkyl-alkyl, alkenyl, alkynyl, methylenedioxy, hydroxy, alkoxy, alkoxy-alkyl, alkoxy-alkoxy, aryloxy, alkylcarbonyloxy, halogen, OCF_3, CN, amino, carbamoyl, nitro, a mono- or polycyclic aryl group, a monocyclic 5- or 6-membered, saturated, partially saturated or unsaturated heterocyclic group, and a group of the formula $-X-R'(-Y-R'')_n$; wherein X and Y independently of each another represent oxygen or sulphur, n is 0, 1 or 2, and R' and R'' independently of each another represent alkyl or cycloalkyl; or a fluorescent group; or

R^1 represents a monocyclic 5- or 6- membered, saturated, partially saturated or unsaturated heterocyclic group, which heterocyclic group may be substituted one or more times with substituents selected from the group consisting of alkyl, cycloalkyl, cycloalkylalkyl, alkenyl, alkynyl, methylenedioxy, hydroxy, alkoxy, alkoxy-alkyl, alkoxy-alkoxy, aryloxy, alkylcarbonyloxy, halogen, CF_3, OCF_3, CN, sulfanyl, nitro, a mono- or polycyclic aryl group, a monocyclic 5- or 6- membered, saturated, partially saturated or unsaturated heterocyclic group, and a group of the formula -X-R'(-Y-R")$_n$; wherein X and Y independently of each another represent oxygen or sulphur, n is 0, 1 or 2, and R' and R" independently of each another represent alkyl or cycloalkyl; or a fluorescent group; or

R^1 represents a bi-cyclic heterocyclic group composed of a monocyclic 5- or 6- membered heterocyclic group with one heteroatom, fused to a benzene ring or fused to another monocyclic 5- or 6- membered, saturated, partially saturated or unsaturated heterocyclic group, all of which is substituted one or more times with substituents selected from the group consisting of alkyl, cycloalkyl, cycloalkylalkyl, alkenyl, alkynyl, methylenedioxy, hydroxy, alkoxy, alkoxy-alkyl, alkoxy-alkoxy, aryloxy, alkylcarbonyloxy, halogen, CF_3, OCF_3, CN, sulfanyl, amino, nitro, a mono- or polycyclic aryl group, a monocyclic 5- or 6- membered, saturated, partially saturated or unsaturated heterocyclic group, and a group of the formula -X-R'(-Y-R")$_n$; wherein X and Y independently of each another represent oxygen or sulphur, n is 0, 1 or 2, and R' and R" independently of each another represent alkyl or cycloalkyl; or a fluorescent group.

2. A chemical compound of claim 1, wherein

R^1 represents a 1-naphthyl group, a 2-naphthyl group, a 3-naphthyl group or a 4-naphthyl group; which naphthyl groups may be substituted one or more times at the 5, 6, 7 or 8-positions.

3. The chemical compound of claim 2, wherein

R represents hydrogen or alkyl; and

R^1 represents a 1-naphthyl group or a 2-naphthyl group; which naphthyl groups may be substituted one or more times with substituents selected from the group consisting of halogen, amino, hydroxy, alkoxy, alkoxy-alkyl, alkoxy-alkoxy, alkylcarbonyloxy, sulfanyl, alkylsulfanyl, alkylsulfanyl-alkoxy, alkoxy-alkylsulfanyl, alkylsulfanyl-alkylsulfanyl, pyrrolidinyl, piperidinyl, piperazinyl, and homopiperazinyl.

4. The chemical compound of claim 3, wherein

R^1 represents acetoxy-naphthyl, methoxy-naphthyl, hydroxy-naphthyl, bromo-naphthyl, methoxymethoxy-naphthyl, methoxyethoxy-naphthyl, ethylsulfanyl-naphthyl, methylsulfanyl-naphthyl, ethoxy-naphthyl, sulfanyl-naphthyl, methoxyethylsulfanyl-naphthyl, ethoxyethoxy-naphthyl, amino-naphthyl, dimethylamino-naphthyl, diethylamino-naphthyl, pyrrolidinyl-naphthyl, piperidinyl-naphthyl, piperazinyl-naphthyl, or homopiperazinyl-naphthyl.

5. A compound of claim 1 which is

(±)-3-[1-(2-Iodophenyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[1-(2-Bromophenyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[1-(2-Chlorophenyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[1-(2-iodophenyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[1-(2-bromophenyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[1-(2-chlorophenyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-(methoxy)-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-(hydroxy)-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-(2-methoxyethoxy)-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
Exo-3-[6-(methoxymethoxy)-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]octane;
(±)-3-[6-(acetyloxy)-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-8-methyl-3-[6-(ethylsulfanyl)-2-naphthyl]-8-azabicyclo[3.2.1]oct-2-ene;
(±)-8-methyl-3-[6-(methylsulfanyl)-2-naphthyl]-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-(ethoxy)-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-(sulfanyl)-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[6-(2-methoxyethylsulfanyl)-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-(2-ethoxyethoxy)-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-bromo-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-amino-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-dimethylamino-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-diethylamino-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-8-methyl-3-[6-(N-pyrrolidinyl)-2-naphthyl]-8-azabicyclo[3.2.1]oct-2-ene;
(±)-8-methyl-3-[6-(N-piperidinyl)-2-naphthyl]-8-azabicyclo[3.2.1]oct-2-ene;
(±)-8-methyl-3-[6-(N-piperazinyl)-2-naphthyl]-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-(N-homopiperazinyl)-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
Exo-3-[6-(2-methoxyethoxy)-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]octane;
Exo-3-[6-methoxy)-2-naphthyl]-8-methyl-8-azabicyclo[3.2.1]octane;
(±)-3-[6-Fluoro-2-naphtyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-Chloro-2-naphtyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-Iodo-2-naphtyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[7-Bromo-2-naphtyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[7-Fluoro-2-naphtyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[7-Chloro-2-naphtyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene; or
(±)-3-[7-Iodo-2-naphtyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
or a pharmaceutically acceptable addition salt thereof.

6. The chemical compound of claim 1, wherein

R^1 represents a monocyclic 5- or 6-membered heterocyclic group, which heterocyclic group may be un-saturated, partially un-saturated or saturated, and may contain one or two heteroatoms selected from the group consisting of N, S, O and Se.

7. The chemical compound of claim 6, wherein

R^1 represents a 5-membered heterocyclic group selected from the group consisting of dioxolanyl, furanyl, furazanyl, imidazolyl, isoimidazolyl, isopyrrolyl, isothiazolyl, isoxazolyl, oxazolyl, pyrazolyl, pyrrolyl, pyrrolidinyl, selenophene-yl, thiadiazolyl, thiazolyl, thienyl, and triazolyl.

8. The chemical compound of claim 7, wherein

R^1 represents a 5-membered heterocyclic group selected from the group consisting of 2-furanyl, 2-thienyl, 4-thiazolyl, 5-imidazolyl, 5-triazolyl, 2-pyrrolyl, 2-selenophene-yl, 3-thiadiazolyl, 5-isoxazolyl, 5-oxazolyl, 5-pyrazolyl, 5-isothiazolyl, 5-furazanyl; which heterocyclic groups may be substituted one or more times with substituents selected from the group consisting halogen, amino, hydroxy, alkoxy, alkoxy-alkyl, alkoxy-alkoxy, sulfanyl, alkylsulfanyl, alkylsulfanyl-alkoxy, alkoxy-alkylsulfanyl, and alkylsulfanyl-alkylsulfanyl.

9. The chemical compound of claim 6, wherein

R^1 represents a 6-membered heterocyclic group selected from the group consisting of dioxanyl, morpholinyl, oxazinyl, piperazinyl, piperidinyl, pyranyl, pyrazinyl, pyridazinyl, pyridinyl, and pyrimidinyl.

10. The chemical compound of claim 9, wherein

R^1 represents a 6-membered heterocyclic group selected from the group consisting of 3-pyridyl, 4-pyridazyl, 4-pyrimidyl, and 3-pyrazinyl; which heterocyclic groups may be substituted one or more times with substituents selected from the group consisting halogen, amino, hydroxy, alkoxy, alkoxy-alkyl, alkoxy-alkoxy, sulfanyl, alkylsulfanyl, alkylsulfanyl-alkoxy, alkoxy-alkylsulfanyl, and alkylsulfanyl-alkylsulfanyl.

11. The chemical compound of claim 1, wherein

R^1 represents a bi-cyclic heterocyclic group selected from the group consisting of 5 or 6-benzimidazolyl, 5 or 6-benzofuranyl, 5 or 6-benzothiazolyl, 5 or 6-benzothienyl, 5 or 6-benzotrizolyl, 6 or 7-cinnolinyl, 5 or 6-indazolyl, 5 or 6-indolizinyl, 5 or 6-indolyl, 5 or 6-isoindolyl, 6 or 7-isoquinolinyl, 6-phthalazinyl, 6 or 7-quinolinyl, 6 or 7-quinolizinyl, and 6 or 7-quinoxalinyl; which heterocyclic groups may be substituted one or more times with substituents selected from the group

consisting halogen, amino, hydroxy, alkoxy, alkoxy-alkyl, alkoxy-alkoxy, sulfanyl, alkylsulfanyl, alkylsulfanyl-alkoxy, alkoxy-alkylsulfanyl, and alkylsulfanyl-alkylsulfanyl.

12. A compound of claim 1 which is

(±)-3-[2-(3-Bromofuranyl)]-8-H-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Bromofuranyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Bromofuranyl)]-8-ethyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Chlorofuranyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Iodofuranyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Bromothienyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Bromothienyl)]-8-ethyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Bromothienyl)]-8-H-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Iodoothienyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3,4-Dibromothienyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3,4-Dichlorothienyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[4-(5-Bromothiazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[4-(5-Chlorothiazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[4-(5-Iodothiazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[5-(4-Bromo-1-methyl-imidazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[5-(4-Chloro-1-methyl-imidazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[5-(4-Iodo-1-methyl-imidzolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[5-(4-Bromo-1-methyl-1,2,3-triazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[5-(4-Chloro-1-methyl-1,2,3-triazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[5-(4-Iodo-1-methyl-1,2,3-triazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Bromo-1-methyl-pyrrolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Chloro-1-methyl-pyrrolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Iodo-1-methyl-pyrrolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Bromoselenophenyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Chloroselenophenyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[2-(3-Iodoselenophenyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[3-(4-Bromo-1-2-5-thiadiazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[3-(4-Chloro-1-2-5-thiadiazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[3-(4-Iodo-1-2-5-thiadiazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Bromo-isoxazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Chloro-isoxazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Iodo-isoxazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Bromo-oxazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Chloro-oxazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Iodo-oxazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Bromo-1-methylpyrazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Chloro-1-methylpyrazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Iodo-1-methylpyrazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Bromo-isothiazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Chloro-isothiazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Iodo-isothiazolyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Bromo-furazanyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Chloro-furazanyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-(4-Iodo-furazanyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[3-(2-Bromo-pyridyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[3-(2-Chloro-pyridyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[3-(4-Bromo-pyridyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[3-(4-Chloro-pyridyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[4-(3-Bromo-pyridazyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[4-(3-Chloro-pyridazyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[4-(3,6-Dibromo-pyridazyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[4-(3,6-Dichloro-pyridazyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[4-(5-Bromo-pyrimidyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[4-(5-Chloro-pyrimidyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[3-(2,6-dichloropyrazinyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[3-(2-Chloro-pyrazinyl)]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-Isoquinolinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-Quinolinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[7-Isoquinolinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[7-Quinolinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[1-H-5-Benzimidazolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;

(±)-3-[1-H-6-Benzimidazolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[1-H-5-Benzotrizolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[1-H-6-Benzotrizolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[2-Amino-1-H-5-benzimidazolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[2-Amino-1-H-6-benzimidazolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-phthalazinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-Benzofuranyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-Benzofuranyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-Benzothienyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-Benzothienyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-Benzothiazolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-Benzothiazolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[1-Methyl-5-indolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[1-Methyl-6-indolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[5-Indolizinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-Indolizinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[2-Methyl-5-isoindolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[2-Methyl-6-isoindolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[1-Methyl-5-indazolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[1-Methyl-6-indazolyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-Quinolizinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[7-Quinolizinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-Cinnolinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[7-Cinnolinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
(±)-3-[6-Quinoxalinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene; or
(±)-3-[7-Quinoxalinyl]-8-methyl-8-azabicyclo[3.2.1]oct-2-ene;
or a pharmaceutically acceptable addition salt thereof.

13. A pharmaceutical composition comprising a therapeutically effective amount of the chemical compound of claim 1, or a pharmaceutically acceptable addition salt thereof, together with at least one pharmaceutically acceptable carrier or diluent.

14. An assay kit comprising the pharmaceutical composition according to claim 13 in a unit dosage form in a suitable container.

15. An assay kit according to claim 14 further comprising a stabilising composition.

16. The use of the chemical compound according to claim 1 for the manufacture of a medicament for the treatment or alleviation of a disease or disorder of a living animal body, including a human, which disease or disorder is responsive to the action of a nicotinic Acetyl Choline Receptor (nAChR) modulator.

17. The use according to claim 16, wherein the disease or disorder to be treated is a disease or disorder of the central nervous system, a disease or disorder caused by or related to smooth muscle contraction, an endocrine disorder, a disease or disorder caused by or related to neuro-degeneration, a disease or disorder caused by or related to inflammation, pain, a withdrawal symptom caused by the termination of abuse of chemical substances.

18. The use of a compound according to claim 17, wherein the disease or disorder of the central nervous system is anxiety, cognitive disorders, learning deficit, memory deficits and dysfunction, Alzheimer's disease, attention deficit, attention deficit hyperactivity disorder, Parkinson's disease, Huntington's disease, Amyotrophic Lateral Sclerosis, Gilles de la Tourettes syndrome, depression, mania, manic depression, schizophrenia, obsessive compulsive disorders (OCD), panic disorders, eating disorders such as anorexia nervosa, bulimia and obesity, narcolepsy, nociception, AIDS-dementia, senile dementia, periferic neuropathy, autism, dyslexia, tardive dyskinesia, hyperkinesia, epilepsy, bulimia, post-traumatic syndrome, social phobia, chronic fatigue syndrome, sleeping disorders, pseudodementia, Ganser's syndrome, pre-menstrual syndrome, late luteal phase syndrome, chronic fatigue syndrome, mutism, trichotillomania, and jetlag.

19. The use according to claim 17, wherein the disease or disorder caused by or related to smooth muscle contraction is convulsive disorders, angina pectoris,

premature labor, convulsions, diarrhoea, asthma, epilepsy, tardive dyskinesia, hyperkinesia, premature ejaculation, and erectile difficulty.

20. The use according to claim 17, wherein the endocrine disorder is thyrotoxicosis, pheochromocytoma, hypertension and arrhythmias.

21. The use according to claim 17, wherein the neuro-degenerative disease is transient anoxia and induced neurodegeneration.

22. The use according to claim 17, wherein the disease or disorder caused by or related to inflammation is an inflammatory skin disorder such as acne and rosacea, Chron's disease, inflammatory bowel disease, ulcerative collitis, and diarrhoea.

23. The use according to claim 17, wherein pain is a mild, a moderate or a severe pain of acute, chronic or recurrent character, a pain caused by migraine, a postoperative pain, or a phantom limb pain.

24. The use according to claim 17, wherein the addictive substance is a nicotine containing product such as tobacco, an opioids such as heroin, cocaine or morphine, a benzodiazepine or a benzodiazepin-like drug, or alcohol.

25. The use of the chemical compound according to claim 1, or any of its enantiomers or any mixture thereof, in labelled or unlabelled form, for the manufacture of a diagnostic agent for the diagnosis of a disorder or disease of a living animal body, including a human, which disease or disorder is responsive to the action of a nicotinic Acetyl Choline Receptor (nAChR) modulator.

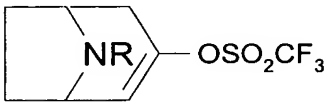
26. A method for the preparation of the compounds according to claim 1, which method comprises

A) the step of reacting a compound having the formula

(II)

wherein R is as defined in claim 1,
with a compound of the formula R^1-Li,
wherein R^1 is as defined in claim 1,
followed by dehydration of the compound obtained; or

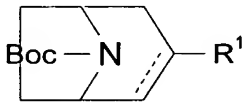
B) the step of reacting a compound having the formula



(III)

wherein R is as defined in claim 1,
with a compound of formula R^1-X,
wherein R^1 is as defined in claim 1,
and X represents halogen, boronic acid, or trialkylstannyl; or

C) the step of reducing a compound having the formula



(IV)

wherein R^1 is as defined in claim 1.

27. A method of the treatment or alleviation of a disease or disorder of a living animal body, including a human, which disease or disorder is responsive to the action of a nicotinic Acetyl Choline Receptor (nAChR) modulator, which method comprises the step of administering to such a living animal body, including a human, in need thereof a therapeutically effective amount of the chemical compound according to claim 1.

28. The method according to claim 27, wherein the disease or disorder to be treated is a disease or disorder of the central nervous system, a disease or disorder caused by or related to smooth muscle contraction, an endocrine disorder, a disease or disorder caused by or related to neuro-degeneration, a disease or disorder caused by or related to inflammation, pain, a withdrawal symptom caused by the termination of abuse of chemical substances.

29. The method of claim 28, wherein the disease or disorder of the central nervous system is anxiety, cognitive disorders, learning deficit, memory deficits and dysfunction, Alzheimer's disease, attention deficit, attention deficit hyperactivity disorder, Parkinson's disease, Huntington's disease, Amyotrophic Lateral Sclerosis, Gilles de la Tourettes syndrome, depression, mania, manic depression, schizophrenia, obsessive compulsive disorders (OCD), panic disorders, eating disorders such as anorexia nervosa, bulimia and obesity, narcolepsy, nociception, AIDS-dementia, senile dementia, periferic neuropathy, autism, dyslexia, tardive dyskinesia, hyperkinesia, epilepsy, bulimia, post-traumatic syndrome, social phobia, chronic fatigue syndrome, sleeping disorders, pseudodementia, Ganser's syndrome, pre-menstrual syndrome, late luteal phase syndrome, chronic fatigue syndrome, mutism, trichotillomania, and jetlag

30. The method of claim 28, wherein the disease or disorder caused by or related to smooth muscle contraction is convulsive disorders, angina pectoris, premature labor, convulsions, diarrhoea, asthma, epilepsy, tardive dyskinesia, hyperkinesia, premature ejaculation, and erectile difficulty.

31. The method of claim 28, wherein the endocrine disorder is thyrotoxicosis, pheochromocytoma, hypertension and arrhythmias.

32. The method of claim 28, wherein the neuro-degenerative disease is transient anoxia and induced neurodegeneration.

33. The method of claim 28, wherein the disease or disorder caused by or related to inflammation is an inflammatory skin disorder such as acne and rosacea, Chron's disease, inflammatory bowel disease, ulcerative collitis, and diarrhoea.

34. The method of claim 28, wherein pain is a mild, a moderate or a severe pain of acute, chronic or recurrent character, a pain caused by migraine, a postoperative pain, or a phantom limb pain.

35. The method of claim 28, wherein the addictive substance is a nicotine containing product such as tobacco, an opioids such as heroin, cocaine or morphine, a benzodiazepine or a benzodiazepin-like drug, or alcohol.

36. A method for the non-invasive determination of the distribution of a tracer compound inside a whole, intact living animal or human body using a physical detection method, wherein the tracer compound is a compound according to claim 1, or any of its enantiomers or any mixture thereof, or a pharmaceutically acceptable salt thereof, in labelled or unlabelled form.

37. The method of claim 36, wherein the physical detection method is selected from PET, SPECT; MRS, MRI, CAT, or combinations thereof.